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ENTOMOLOGICAL NEWS

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ENTOMOLOGICAL NEWS

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Nymph of the Protoneurine Genus Neoneura (Odonata).

By JAMES G. NEEDHAM, Cornell University.

Among some dragonflies that were sent me for determination in 1935 by Brother Roberto of the Colegio de La Salle, Vedado, Havana, Cuba, were a number of specimens of *Neoneura carnatica.* Having been unable, on two collecting trips to Texas, to find any living specimens of the one species of *Neoneura* known from the United States (*N. aaroni*), and desiring to know what the nymph of the genus is like, I followed up this clue and went to Cuba, to search for it, and got it. In company with Dr. J. C. Bradley, I spent the last ten days of March, 1939, collecting insects in Cuba. We were greatly aided by Dr. S. C. Bruner and his colleagues of the Entomological staff of the Estacion Experimental Agronomica at Santiago de las Vegas, Dr. J. Acuña and Mr. F. de Zayas. The latter took us to see Brothers León and Roberto at the above named college, and from them we received information, and a cordial invitation to *Las Animas,* a retreat maintained for the staff of the college on the summit of a ridge in the Rangel Mountains of Piñar del Rio.

A fine road led westward to the City of Piñar del Rio, and a branch of it northward into the mountains at Viñales. A passable dirt road continued on to El Retiro (where we left it) and northward across the ranges to the north coast. Along the six-mile trail leading from El Retiro to Las Animas I found *N. carnatica* nymphs in abundance.

The very first dragonfly I encountered at El Retiro was a nymph of this species in transformation. It was clinging to the wall of an artificial spring-fed pool a few inches above the surface of the slowly flowing water. I could not then tell that it was a *Neoneura;* it looked like an *Argia.* I sat by it

until the wings were expanded and then popped it and its empty skin inside a little paper bag (a supply of which is ever ready in a pocket of my collecting jacket) and left it to mature its colors. Then with Dr. Acuña's aid, I went collecting adults, among which were a few Neoneuras.

The next place I found it was also at El Retiro, on the cobblestones at the edge of the first ford that the dirt highway crosses going northward. This proved to be the place of greatest abundance of the nymphs. They were found clinging to the stones in the swiftest water and not at all in the slack water at the edges. They cling firmly to the stones when these are lifted and are easily picked off by hand.

A few cast skins were seen sticking to surfaces exposed above the water and two more specimens were taken in transformation. Most of the nymphs were well grown. Evidently the season of transformation was just opening. This was on March 25th.

The next day we went afoot up the rocky six-mile trail to Las Animas, taking most of the day for it, and enjoying the beautiful mountain scenery along the way. I collected a little at every crossing of the stream whose course the trail follows, and found some nymphs of Neoneura in nearly all of them. Always they were clinging to the under surfaces of stones, where they were regularly associated with nymphs of *Scapanea frontalis*. Another lotic species, *Macrothemis celeno*, was more commonly seen on the wing. Its nymph lives in the more quiet places among the rocks of the riffles. Among the weeds at the edges in quieter waters the damselfly *Enallagma cardenium* was ever present, and the adults of that species were far more abundant than the Neoneuras. Dr. Acuña collected several adults of *Protoneura capillaris* along the way but I did not find the nymph.

Description of the Nymph.

The nymph of *Neoneura carnatica* may be characterized as follows:

It measures in length 12 mm. with the gills 5 mm. additional; hind femur 3; width of head 3.5; of abdomen 3.

It is a short stout blackish nymph, in form, widest across

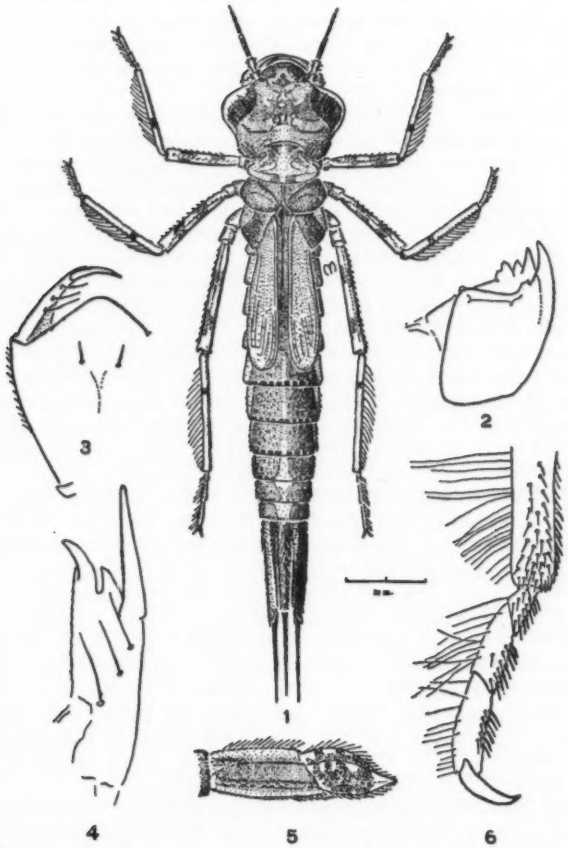


Figure 1. Nymph of *Neoneura carnetica*. 2. Left mandible of nymph. 3. Labium of nymph. 4. Lateral lobe of labium. 5. Lateral view of gills. 6. Tip of tibia and tarsus of mesothoracic leg. (Drawings by Dr. May K. Gyger.)

the head, and tapering rather regularly backward to the tip of the caudal gills. The pale ground color of the body is heavily overlaid with blackish-brown pigment on the dorsum. This appears in a mottled pattern on the frons, in a crossband between the eyes, on the sides of the prothorax, all over the

dorsum of the synthorax and along the sloping sides of the abdomen, on the gills, and as blackish rings on the legs. The abdomen is pale at the sides below the wings, and in a mid-dorsal line from wings backward, the stripe widening on the terminal segments.

The head is broad and flat, widest across the very large eyes, rounded behind the eyes and excavated in the rear. The hind angles are densely spinulose. The antennae are brownish, paler at the joinings of the segments, and seven-jointed. The joints are proportioned in length from the base outward as 5:6:10:6:5:4:3. The labium is short and wide. Its middle hinge lies entirely underneath the prothorax. The mentum is semioval. Its front margin is produced in a broadly rounded entire middle lobe, and there is a single pair of slender minute setae near the middle line. Lateral lobe narrow stout, armed with three lateral setae and a stout incurving movable hook. On the distal end above the stout end hook there is an elongate triangular tooth that is also a little incurved and hook-like. The inner border of the lateral lobe is almost smooth and the usual prominence at its outer end is scarcely discoverable being appressed closely to the end hook.

Prothorax flat above, with its disc rather narrower than the body is below it, and rounded at both its sides and its ends. The anterior end fits closely into the occipital excavation of the head. The synthorax is little depressed. Legs pale; femora with two rings of brown and with touches of the same color on the anterior face at both ends. Tibiae with a single ring of brown at one-third their length; all heavily fringed with long hairs on the posterior margin, and densely beset with sharp spinules on the inner surface toward the tip, as are also the tarsal segments. Those spinules at the extreme tip of the tibiae are spur-like and the others are serrately margined or sub-plumose. The slender wing sheaths reach rearward to the middle of the fifth abdominal segment.

Abdomen slightly depressed basally, regularly tapered from front to rear, becoming cylindric at the tip. The terminal segments decrease successively in length, and the last one bears an apical ring of sharp brown marginal spinules. Gills thick at base and tapering to thin lamellae at the tip, obliquely divided at two-fifths their length into two parts: a thick blackish laterally carinate basal segment that is longer on its ventral margin; and a thin, pointed, apical leaf-like portion, that is paler at margins and apex.

The genitalia are unusually prominent: in the male a pair of stout brown submedian spines on segment 9 that project rear-

ward beyond the apical margin of that segment; in the female the two upcurving ovipositor blades, and their sharp-pointed covering sheaths extend beyond the apex of the 10th segment half the length of that segment.

Specimens are in the Cornell University collection.

On Two Species of Neotiphia from Arizona (Hymenoptera: Tiphiidae).

By V. S. L. PATE, Cornell University.

(Continued from page 224.)

Neotiphia pima[3] new species.

The present species is somewhat intermediate in character between *Neotiphia cockerelli* Allen and *N. conspicua* Allen, agreeing with the former in the cylindrical non-flattened hind metatarsi and with the latter in the conspicuously hirsute margins of the oral cavity, but is readily distinguished from both by the clear hyaline wings, the presence of a low median longitudinal carinula bisecting the median areole of the dorsal face of the propodeum and by a continuous groove about the lateral and posterior margins of the tegulae. In addition, *pima* is separable from *conspicua* by the strongly lineate lateral faces of the propodeum and the differently constructed first abdominal sternite, while from *cockerelli* the present species may be differentiated by the absence of a median longitudinal carina on the sixth abdominal sternite. The female recorded below as the provisional allotype of this species is apparently most closely related to *Neotiphia novomexicana* Allen from which it may be distinguished by the tawny wings, the nitidous clypeal bevel, the complete uninterrupted transverse pronotal carina and the differently shaped median areole of the dorsal face of the propodeum.

Type. — ♂ ; Wilmot, seven miles southeast of Tucson, Pima County, ARIZONA. Elevation, 2600 feet. August 25, 1937. (Rehn, Pate and Rehn; at flowers of *Acacia.*) [Academy of Natural Sciences of Philadelphia, Type-no. 4199.]

♂.—8 mm. long. Black; mandibles dark red apically; tarsal segments dark fulvous apically. Wings clear hyaline; stigma and veins brunneous.

[3] After the Pima Indians of southern Arizona.

Head fulgid; vertex and upper half of front without acupuncturation, with moderately large punctures of second to third degree density and with a large transverse glabrous nitidous area just before anterior ocellus. Ocellocular line slightly longer than the postocellar line. Occiput and temples with moderate puncturation of second to third degree density and clothed with long suberect light hairs. Margins of oral cavity and ventral aspect of head densely clothed with rather long erect white pubescence. Labium with a median longitudinal groove on basal half to two-thirds. Clypeus and lower half of front opaque and with fine close acupuncturation; the front with larger and coarser superposed punctures of the second degree of density and sparsely clothed with suberect light pubescence; antennocular line one-fourth the length of the eye. Clypeus transverse, subadamantiform, length medially one-half that of eye, with superposed larger puncturation of the first degree of density and clothed with short light aeneous reclinate pubescence; tumid discally and produced medio-apically into acute point, laterad of which the apical margin is oblique and abruptly inflexed. Mandibles punctate on basal half; median longitudinal groove obsolescent or absent.

Thorax fulgid; pronotum dorsally, save for a broad transverse nitidous glabrous arcuate apical band, with sparse scattered puncturation largely of third degree density, acupuncturation absent, anterior dorsal margin with a strong uninterrupted transverse sublaminate carina, lateral faces narrowly above with sparse puncturation of second degree density and with fine very inconspicuous minute microscopic clathrate aciculation below and with an oblique subfoveolate groove paralleling the lower margin. Mesonotum with an irregular row of large coarse close punctures along the anterior edge and the inner margins of the notauli, disc with a large patch of large punctures of second degree density and posterior margin with a small semilunate patch of smaller punctures medially. Scutellum with anterior half, save for a few scattered punctures, practically impunctate, the posterior half with moderately sized punctures of third degree of density. Postscutellum with scattered punctures of second degree of density. Tegulae broader than long and with a groove continuous about lateral and posterior margins. Mesopleura clothed with long suberect white pubescence; anteriorly with a strong epicnemium which is not continued onto mesosternum, devoid of acupuncturation but covered with large coarse punctures of second to third degree density. Propodeum fulgid, glabrous; dorsal face with median areole about as long as broad at base, the lateral

carinae strongly convergent posteriorly, bisected for its entire length by a median longitudinal carinula, the surface minutely rugulose within, laterad of lateral carinae the surface is finely rugulose halfway to the lateral margin beyond which it is sublaevigate, posterior margin of dorsal face furnished with a strong transverse biangulate carina which is foveolate on both sides; posterior face finely rugosopunctate, more coarsely so marginally, without a median longitudinal carinula, lateral margins rather weakly carinate; lateral faces horizontally to obliquely strongly lineate. Hind tibiae with the sensorium elongate, cuneate and moderately impressed. Hind metatarsi cylindical, devoid of short stout spines above.

Abdomen fulgid, without acupuncturation. First five tergites with large coarse punctures of third degree density discally grading to second degree laterally; penult tergite with closer puncturation throughout; ultimate tergite coarsely, closely rugosely punctate, not carinate longitudinally. Tergites with short sparse inconspicuous suberect light subaeneous pubescence, with a transverse subapical row of longer stronger aeneous setulae along the anterior margin of the transverse nitidous apical band. First sternite subfulgid, with a V-shaped carina separating the escutcheon from the disc which is bisected on its anterior half by a high median longitudinal carina emanating from the angle of the anterior V-shaped carina, the disc anteriorly and laterally with large coarse semiconfluent punctures, posteriorly and medially with fine acupuncturation. Sternites with close puncturation of second degree of density and with a transverse row of subapical setulae as on tergites. Sixth sternite with the lateral carinae distinct on apical two-thirds and separated from the median shagreened stripe by a single row of punctures, no median longitudinal carinula present, not produced medio-apically into an emarginate lobe separated laterally by deep rounded notches.

Allotype.— ♀ ; Topotypical; same data as type. [Academy of Natural Sciences of Philadelphia.]

♀.—12 mm. long. Similar to male except as follows: Wings clear hyaline, strongly tinged with fulvous; stigma brunneous, veins fulvous.

Head with puncturation in general similar to male but practically devoid of acupuncturation. Clypeus transverse, semilunate, length medially about one-half that of eye, closely rather finely punctate and with a transverse submarginal carinula which is obsolescent medially on the flat disc, produced medio-apically into a broad transverse arcuate lobe which is

provided with a broad gently deflexed arcuate subnitidous bevel apically. Margins of the oral cavity not densely hirsute as in male. Labium with a median longitudinal sulcus basally.

Thorax with the punctate portion of the dorsal face of the pronotum with the punctures very large, coarse and of the first to second degree of density; lateral faces of pronotum impunctate, save for a marginal row of coarse punctures along the dorsal and anterior edges, the median oblique groove faint and present only medially, the lower half subhorizontally lineate. Mesopleura without an epicnemium anteriorly, punctate as in male. Scutellum with a marginal row of large punctures, otherwise nitidous save for one or two discal punctures. Tegulae broader than long, with a marginal impression continuous about the lateral and posterior edges. Propodeum glabrous, fulgid; dorsal face with the median areole rectangular, one and three-fourths as long as broad at base, the lateral carinae subparallel, bisected for its entire length by a strong median longitudinal carina, finely closely acupunctate within, laterad of the lateral carinae halfway to lateral margins the surface is subopaque and finely closely microscopically acupunctate, the remainder sublaevigate, posterior edge of dorsal face furnished with a strong transverse marginal carina; posterior face with fine microscopic acupuncturation upon which is superposed laterally a stronger scattered puncturation, without a median longitudinal carinula discally, the lateral margins sharply carinate; lateral faces perfulgid, strongly horizontally to obliquely lineate throughout. Hind tibiae with the sensorium cuneate, about twice as long as broad at its widest point and deeply impressed. Hind metatarsi with the longitudinal groove elongate, linear, deeply impressed, and with a double row of three short stout spines above. Fore wing with the stigma small but distinct and definite, extending less than one-half the distance from the origin of the radial vein, which arises distinctly before its apex, to the basal vein.

Abdomen fulgid, without acupuncturation. First four tergites with large punctures of third degree density discally grading to second degree laterally; fifth tergite with large close puncturation; last tergite with the basal two-thirds very coarsely closely rugosely punctured and abruptly elevated above the apical impunctate shagreened thin and foliate portion which is thickly clothed with long sordid light aeneous coarse pubescence basally immediately following the abruptly elevated anterior portion. First five tergites with a transverse subapical row of long aeneous setulae along the anterior margin of the

transverse nitidous apical band; the first four tergites otherwise sparsely clothed with light suberect hairs, the last two tergites more heavily and thickly clothed with similar but more conspicuous pubescence. First sternite with an obtuse tubercle but not with a transverse carina separating the escutcheon from the disc, which is devoid of a median bisecting carina but is finely closely microscopically acupunctate with coarser punctures superposed on the vertical lateral portions and along the anterior margins of the horizontal portion, along the posterior margin of which and the lateral margins posteriorly as well is an impressed submarginal groove. Second sternite with coarse puncturation of second to third degree density, the remaining sternites with similar puncturation of first to second degree density. Sixth sternite with a broad transverse shagreened band on basal third which bears a few moderately large scattered punctures of third degree density laterally, the lateral portions of the basal band abruptly elevated above the distolateral coarsely punctate portions of the sternite and confluent medially with the customary impunctate shagreened median stripe, the lateral margins of which are oblique, bisinuate and convergent apically; the distolateral margins of the sternite furnished with a thick brush of long coarse sordid yellowish hairs.

Paratypes.—7; 6 ♂, 1 ♀, as follows: ARIZONA: 5 ♂; Wilmot, seven miles southeast of Tucson, Pima County, elevation, 2600 feet; August 25, 1937; (Rehn, Pate and Rehn; at flowers of *Acacia*). 1 ♂; Twin Buttes, near Indian Well, Navajo County; elevation, 5850 feet; July 29, 1937; (Rehn, Pate and Rehn; swept from flowers of *Cleome serrulata* [Rocky Mt. Bee-plant]). NEW MEXICO: 1 ♀; Road pass south of Cienaga Peak, Peloncillo Mts., Hidago County; elevation, 4500 feet; August 27, 1937; (Rehn, Pate and Rehn). [All A. N. S. P.].

Remarks.—The female described above and recorded as the provisional allotype of the present species may eventually prove to be a form discrete from the male in view of the fact that it differs markedly from the type in a number of characters, notably in the much larger size, the tawny wings, the longer parallel-sided median areole of the dorsal face of the propodeum, and the quite differently formed and sculptured first abdominal sternite. However, I attribute these differences

largely to the usual antigeny customarily exhibited by the various species of this general complex. I base this association of the sexes of *pima* upon the fact that both were swept from the flowers of an *Acacia* and taken together in the net, although not in copula.

New Species of Stelis from California (Hymenoptera, Megachilidae).

By E. Gorton Linsley, University of California.

The species of *Stelis* described below belong to an interesting group characterized by small size, robust form, large red tegulae, and a characteristic pattern of eburneous abdominial fasciae. They are best represented in southwestern United States and appear to be parasites of *Ashmeadiella*.

Stelis (Stelidium) hemirhoda new species.

♀ : Small, robust; black, tegulae red, abdomen dominantly red, mouth parts and legs partially red; pubescence white with some brownish hairs on vertex and mesoscutum.

Head wider than thorax; antennae black, flagellum brownish beneath; vertex moderately finely, distinctly punctured punctures very close, interspaces shining, pubsecence dominantly brownish with an intermixture of white; face densely clothed with moderately long, depressed, white hairs which obscure the surface; labrum nearly one and one-half times as long as broad, red to reddish piceous, more coarsely punctured apically, apex broadly truncate; mandibles tridentate, red, base and apex black; cheeks densely clothed with long, depressed, white hairs.

Thorax robust; pronotal tubercles black or obscurely reddish, densely clothed with white hairs which obscure the surface; mesoscutum a little more finely punctured than vertex, punctures mostly less than one puncture diameter apart, pubescence whitish and brownish, sparse on disk, more dense at sides and anterior margin; tegulae large, red, finely and not closely punctured, sparsely clothed with very short, fine, obscure, pale hairs; axillae black, densely clothed with white hairs; mesoscutellum a little more coarsely punctured than mesoscutum, pubescent only along lateral and posterior margins; metanotum densely clothed with moderately long white hairs which obscure the surface; propodeum with triangular area subglabrous,

moderately coarsely, closely, distinctly punctured; mesepisterna and mesosternum compressed antero-posteriorly, a little more coarsely punctured than mesoscutum, densely clothed with long white hairs which obscure the surface; legs black, knees, apex of tibiae, and apex of tarsal segments reddish, pubsecence white, denser on lower side of femora and outer face of tibiae; wings lightly infuscated, first recurrent nervure usually received by second submarginal cell near base, second recurrent received before apex.

Abdomen broad at base, red, tergites clouded with black at sides; first tergite with a narrow, transverse, subapical eburneous fascia, entire or very narrowly interrupted at middle, nearly attaining the lateral margins where it is slightly expanded, eburneous fasciae of tergites two to four successively a little more widely separated at middle and broken sublaterally to form a lateral eburneous spot, the lateral fascia narrower than the break on tergite two, as wide as and wider than the break respectively on tergites three and four, fifth tergite with a pair of short, transverse, dorsal fasciae only; tergites moderately closely punctured, punctures on tergites two to five about as large as those of mesoscutum, a little larger on posterior portion of tergite one, the segments margined apically and laterally with a dense fringe of white, depressed hairs, the margin tending to disappear at middle of tergites one and two; sternites red, closely, distinctly punctured, sparsely pubescent except for lateral and apical margins, sixth sternite subtriangularly rounded, not swollen, apex scarcely prejecting beyond tip of sixth tergite. Length: 4-4.5 mm.

♂ : Black, only the tegulae, labrum, mandibles in part, knees, apex of tibiae, apical margin of tergites, and rarely the abdominal sternites reddish; lateral face marks not present; eburneous abdominal fasciae as in female. Length: 4-4.25 mm.

Holotype female (No. 4810 Calif. Acad. Sci., Ent.), *allotype male* (No. 4811 Calif. Acad. Sci., Ent.) and twenty-eight *paratypes,* six male and twenty-two female, collected by the writer at flowers of *Prosopis juliflora* var. *glandulosa,* near Furnace Creek, Death Valley, CALIFORNIA, April 8, 1939, in the company of several species of *Ashmeadiella.* Three additional specimens were taken at the same locality visiting *Pluchea sericea* (Nutt.). Paratypes will be deposited in the collections of Dr. T. D. A. Cockerell, Mr. P. H. Timberlake, Mr. C. D. Michener, Mr. G. E. Bohart, the Academy of Natural Sci-

ences of Philadelphia and the writer.

This species is apparently to be considered as a *Stelidium* and is related to *S.* (*S.*)*cockerelli* (Hicks), but differs at once from that species in color, arrangement of the eburneous abdominal fasciae, punctation of vertex, and in the form of the sixth abdominal sternite which, in the female, is not swollen and does not project beyond the apex of the sixth tergite. From *S.* (*S.*) *permaculata* (Ckll.) it differs in the absence of lateral face marks in the male, red tegulae, and the arrangement of the eburneous fasciae on the abdominal tergites. In *hemirhoda* there is a single fascia on the first tergite (sometimes narrowly broken at middle) which extends across the segment and nearly attains the lateral margin, and lateral fasciae are present on tergites two to four. In *permaculata,* according to the description, there are four fasciae on the first tergite and the lateral fasciae are not present beyond the third segment.

Stelis (Stelidium) acutiventris new species.

♀ : Small, robust; black, tegulae reddish, abdomen, legs, and mouth-parts in part rufo-testaceous; pubescence white.

Head a little wider than thorax; antennae black, flagellum obscurely brownish beneath; vertex moderately finely, closely, distinctly punctured, sparsely clothed with pale hairs; face densely clothed with long depressed, white hairs which obscure the surface; labrum about one and one-half times as long as broad, black, narrowly margined with rufo-testaceous, punctation moderately fine, close, apex truncate; mandibles tridentate, testaceous, base and apex black; cheeks moderately densely clothed with depressed white hairs.

Thorax robust; pronotal tubercles obscurely reddish, densely clothed with white hairs; mesoscutum less closely punctured than vertex, thinly clothed with depressed white or vaguely brownish hairs, denser along lateral and apical margins; tegulae large, red, finely punctured, sparsely clothed with very short, fine, obscure, pale hairs; axillae black, densely clothed with white hairs; mesoscutellum more closely punctured than mesoscutum, clothed with long, white hairs which are sparse on disk and anterior margin; metanotum clothed with white hairs; propodeum with triangular area subglabrous, moderately coarsely, closely punctured; mesepisterna moderately coarsely,

closely punctured, clothed with dense, long, white hairs, legs black, knees, apex of tibiae, and apex of tarsal segments rufo-testaceous, pubescence whitish, denser on lower margin of femora and outer face of tibiae; wings lightly infuscated, first recurrent nervure received by second submarginal cell near base, second recurrent received just before apex.

Abdomen broad at base, black, tergites one to five with a narrow apical brownish testaceous band, tergites one to three with a lateral rufo-testaceous area; first tergite with a transverse, subapical eburneous fascia which nearly attains the lateral margin where it is slightly expanded, tergites two to four with a median dorsal fascia, constricted but unbroken at middle and a small lateral fascia, tergite five with a pair of short, scarcely separated, dorsal fasciae only, sixth tergite produced at apex as a subtriangular, apically rounded, vaguely longtudinally carinate process; tergites moderately closely punctured, punctures a little larger than those of mesoscutum, margined apically and laterally with a dense fringe of white depressed hairs, broadly interrupted at middle on tergites one and two; sternites black, apical margin of segments one to four rufo-testaceous at middle, one to three broadly reddish at sides; sixth sternite acutely produced beyond apex of sixth tergite. Length: 4.5 mm.

Holotype female (collection G. E. and R. M. Bohart), from Borego Valley, San Diego County, CALIFORNIA, April 8, 1939, collected by R. M. Bohart, to whom the writer is indebted for the privilege of studying the specimen.

This species differs at once from other members of the subgenus *Stelidium* in the remarkable structure of the sixth abdominal tergite and sternite. It is apparently related to the larger *S.* (*S.*) *cockerelli* (Hicks) which has these same segments modified in a different manner. From both *cockerelli* and *hemirhoda* it also differs in color and the arrangement of the eburneous abdominal fasciae.

Stelis (Stelidium) micheneri new species.

♀ : Small, robust, moderately elongate; black, tegulae red; pubescence white, with some brownish hairs on vertex, mesoscutum, and abdomen.

Head a little wider than thorax; antennae, including underside of flagellum, black; vertex moderately coarsely, closely punctured, sparsely clothed with erect brownish hairs; face and

cheeks densely clothed with long depressed, heavily plumose, white hairs which obscure the surface.

Thorax robust; pronotal tubercles black, densely clothed with white hairs which obscure the surface; mesoscutum very closely punctured, the punctures a little less coarse than those of vertex, pubescence very sparse, mostly brownish; tegulae large, red, moderately finely but distinctly punctured; axillae black, subglabrous, punctures similar to those of mesoscutum; mesoscutellum punctured as mesoscutum, subglabrous, with a fringe of plumose white hairs along posterior lateral margins; metanotum moderately coarsely, closely punctured, moderately clothed with white hairs; propodeum with triangular area subglabrous, moderately coarsely, closely but somewhat irregularly punctured at base; mesepisterna and mesosternum a little less closely, more coarsely punctured than mesoscutum, densely clothed with long, white hairs; legs black, clothed with white hairs; wings dusky, nervures and stigma nearly black.

Abdomen concolorous black except for eburneous fasciae; tergites one to four with an oval eburneous fascia on each side near lateral margin, rarely with a very small spot on tergite five, dorsal fasciae absent on first and second tergite, usually present as small, obscure, widely separated spots on tergites three and four, integument moderately coarsely, closely punctured, sparsely clothed with erect brownish hairs and with fringe of depressed, white, heavily plumose hairs along lateral posterior margins of segments; sternites one to five coarsely, closely punctured, sixth sternite finely, closely punctured, more or less evenly and feebly convex, not tumid, extending beyond apex of sixth tergite, apex broadly, subtriangularly rounded. Length: 4.5 — 5 mm.

♂: Abdominal tergites with slightly larger, more conspicuous eburneous fasciae, lateral fasciae present on tergites one to five, dorsal fasciae present and distinct on tergites three to five, rarely represented by a small spot on tergite two, dorsal fasciae widely separated, usually slightly transverse. Length: 5 mm.

Holotype female and *allotype* male (Michener collection) from Eagle Rock, CALIFORNIA, May 9, 1936, and four male *paratypes*, two with the same data as the types and two from Altadena, California, June 11, 1933, all captured at flowers of *Cryptantha* by Mr. Charles D. Michener. Additional *paratypes*

include four females from near Rock City, Mt. Diablo, California, May 9, 1939 (G. E. Bohart) and ten females from the same locality, May 12, 1939 (G. E. Bohart and J. W. MacSwain). Paratypes are deposited in the collections of G. E. and R. M. Bohart, C. D. Michener, T. D. A. Cockerell, P. H. Timberlake, the Academy of Natural Sciences of Philadelphia, and the writer.

This species is more elongate than the two described above and differs in the coarser punctation of the integument, structure of the sixth sternite of the female, and arrangement and number of abdominal fasciae. It is apparently most closely related to *S.* (*S.*) *cockerelli* (Hicks), but may be distinguished by the feebly convex, non-tumid sixth sternite and the absence of dorsal fasciae on tergites one and two. The following table will separate the females in this group of species:

1. Abdomen black or with very little reddish, sixth sternite projecting beyond apex of sixth tergite..... 2
   Abdomen dominantly reddish, sixth tergite more or less evenly rounded, not produced at middle, sixth sternite not projecting beyond apex of sixth tergite. 4—4.5 mm. Inyo County, California.....*hemirhoda*
2. Sixth abdominal tergite distinctly produced at middle, dorsal eburneous fasciae of tergites one to four distinct 3
   Sixth abdominal tergite not produced at middle, apex more or less broadly rounded, dorsal eburneous fasciae, if present, represented by two small, widely separated spots on tergites three and four only. 4.5—5 mm. Contra Costa County to Los Angeles County, California .....*micheneri*
3. Sixth sternite swollen, apex rounded; dorsal eburneous fasciae of tergites one to four distinctly separated; vertex and mesoscutum with an intermixture of black hairs. 6 mm. Los Angeles County, California .....*cockerelli*
   Sixth sternite not swollen, apex very acute, dorsal eburneous fasciae of tergites one to four unbroken; vertex and mesoscutum without black hairs. 4.5 mm. San Diego County, California.....*acutiventris*

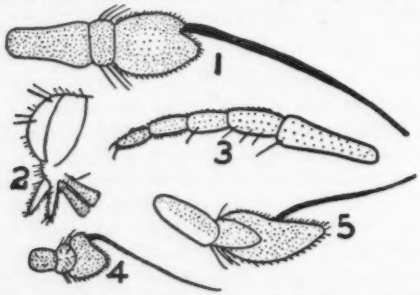
New Utah Dolichopodidae (Diptera).[1]

By F. C. HARMSTON and G. F. KNOWLTON[2]

The following three species of apparently undescribed Dolichopodidae are present in the Utah Agricultural Experiment Station insect collection.

Parasyntormon hendersoni n. sp.[3]

♂. Length 2.8 mm.; of wing, 3 mm. Face very narrow, the eyes nearly contiguous below, covered with silvery pollen not hiding the greenish ground color; front blackish dusted with whitish pollen; proboscis and palpi yellowish, covered with minute yellow pile; antennae (fig. 5) black, first joint



1. *Sympycnus utahensis*, antenna, male; 2. *Parasyntormon hendersoni*, hypopygium, male; 3. *Peloropeodes jamesi*, fore tarsi, male; 4. *Peloropeodes jamesi*, antenna, male; 5. *Parasyntormon hendersoni*, antenna, male.

long, yellowish on lower half, second joint overlapping third on inner margin, third joint black, about twice as long as wide, densely pubescent, evenly rounded below, arista inserted near middle of joint.

Thorax shining green; dorsum dulled with brownish pollen; pleurae dulled with white pollen, bristles black.

All coxae, femora, tibiae and basitarsi yellow; fore coxae entirely pale yellow with minute yellow hairs on anterior surface and several black bristles at tip; middle coxae slightly infuscated on outer surface; hind coxae pale yellow, a strong

[1] Contribution from the department of entomology, Utah Agricultural Experiment Station.

[2] Research assistant and research associate professor of entomology, respectively.

[3] Named in honor of Dr. W. W. Henderson, research professor of entomology, Utah Agricultural Experiment Station, who has spent many years in the study of Utah insects.

black bristle at center on outer surface; fore femora without noticeable bristles on lower outer edge; tips of hind femora brown above; fore basitarsi yellow, with three bristles below, second joint less swollen than usual in this genus; third joint hollowed at base with a short, hooked bristle; fifth joint dark brown, hairy, a little widened; middle tarsi infuscated from tip of second joint, hind ones from middle of second joint; first and third joints of hind tarsi two-thirds the length of second. Calypters and halteres yellow, cilia of the former yellowish, appearing brownish in certain lights.

Wings of usual shape, greyish.

Abdomen black, sub-shining, venter yellow on second to fourth segments, this color extends nearly to dorsum on second and third segments; hairs and bristles black. Hypopygium (fig. 2) black, its lamellae small, narrow, fringed with yellowish hairs; the inner appendages black, enlarged and truncate at tips.

Collections. Male taken at Monticello, UTAH, July 28, 1938, by G. F. Knowlton and F. C. Harmston. *Type* in the insect collection of the Utah Agricultural Experiment Station.

Taxonomy. This species is nearest to *P. flavicoxa* V. D. to which it runs in the Van Duzee table of species (The Canadian Entomologist, Vol. LIV, 1922), but differs from that species in the following points: The first antennal joint of *flavicoxa* is entirely black, in *hendersoni* the corresponding antennal joint is yellow on the ventral half; the middle tibiae of *flavicoxa* bears a row of delicate black hairs on the apical half of ventral surface, whereas, the middle tibiae of *hendersoni* are plain, without noticeable hairs.

Peloropeodes jamesi n. sp.[4]

♂. Length 1.8 mm., of wing 2 mm. Face moderately wide, narrowed below, blackish, covered with dark gray pollen; front greenish, dulled with brownish pollen; proboscis and palpi blackish with black hairs; upper orbital cilia black, the lower cilia white; antennae (fig. 4) black, second joint with bristles above and below, third joint scarcely longer than wide, densely pubescent.

Thorax dark shining green, dorsum dulled with brownish pollen; pleurae green, the pollen covering it more white.

[4] This species is named in honor of Dr. M. T. James.

Coxae, trochanters and femora black, tips of the latter brownish; all tibiae brownish yellow; fore tarsi (fig. 3) yellow; infuscated from tip of third joint, its joints as 20-10-7-7-6. Halteres dark yellow, calypters yellow, cilia of the latter black, appearing brownish in certain lights.

Wings grayish, third and fourth veins parallel beyond the cross-vein.

Abdomen black with faint dark coppery reflections; hairs of thorax and abdomen entirely black; hypopygium black with minute whitish hairs at apex, its appendages mostly imbedded.

♀ Length 2 mm. Agrees with male in general body color and color of legs but differs in third antennal joint being shorter and more rounded at tip and in fore tarsi being of plain structure.

Collections. Described from *male holotype, female allotype,* and four *paratypes* all taken at Blue Creek, UTAH, March 30, 1939, by H. E. Dorst, M. W. Allen and F. C. Harmston; 2 males and 2 females taken same locality April 4, 1939, by H. E. Dorst and M. W. Allen and one male and one female taken at Bear River City, Utah, April 4, 1939, by G. F. Knowlton and F. C. Harmston.

Taxonomy. This species is nearest *fuscipes* V. D. but differs from that species in the shape of the third antennal joint which is acutely pointed and about twice as long as wide in *fuscipes,* whereas in *jamesi* the third antennal joint is distinctly rounded at tip and is hardly as long as wide; the abdomen of *fuscipes* is greenish and in *jamesi* is black with faint coppery reflections.

Sympycnus utahensis n. sp.

♂. Length 2.3 mm., of wing 2.5 mm. Face narrow, dark brown, nearly black, lightly covered with silvery pollen; front dark brown, lightly dusted with golden pollen; palpi dark brown; upper orbital cilia black, inferior orbital cilia white; antennae (fig. 1) black, third joint longer than wide, triangular.

Thorax black, with delicate golden-greenish reflections, the dorsum dulled with brownish pollen, the pleurae dulled with whitish pollen; acrostichal bristles small, in a zigzag row before the flattened space on dorsum; a single pair of large, black scutellar bristles and several small hairs on margin of disk.

Coxae and all of legs black; fore coxae clothed on front

surface with white hairs, their tips with white bristles; front femora with two, middle and hind femora each with one preapical bristle; all tarsi plain, first joint of fore tarsi as long as second and third joints combined, the joints of middle tarsi as 11-5-4-3-3, of hind tarsi as 8-7-5-3-3; calypters yellow with black tip, fringed with long black cilia; halteres dark brown becoming lighter near apical portion.

Wings grayish, tip of fourth vein distinctly before apex of wing, wings narrowed at base, fringed along anal margin with prominent, light-colored cilia, sixth vein indistinct, not reaching wing margin.

Abdomen black with greenish-bronze reflections; first segment with a row of black bristles on dorsal and lateral surfaces; hair of abdomen dense and black; hypopygium black, its black appendages of moderate length, fringed with light hairs.

Collections. Described from two males, the *holotype* taken at Cedar Breaks and the *paratype* from Panguitch Lake, UTAH, August 3, 1938 by G. F. Knowlton and F. C. Harmston.

Taxonomy. This is the only North American species of the genus *Sympycnus* known to the writers which is entirely black in color of legs, antennae and body.

Current Entomological Literature

COMPILED BY V. S. L. PATE, L. S. MACKEY and E. G. FISHER.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. All continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Note. References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of Entomological News for 10c. The number of, or annual volume, and in some cases the part, heft, &c., the latter within ( )follows; then the pagination follows the colon :

Papers published in the Entomological News are not listed.

GENERAL.—Andison, H.—A method of mounting entomological specimens in gelatin. [4] 71: 185-187. **Anon.**—Das laufen auf sechs Beinen. [Kosmos] 36: 322, ill. **Bondar, G.**—Notas entomologicas da Bahia. IV. [105] 10: 1-14, ill. **de la Torre-Bueno, J. R.**—On foot notes, glosses, obiter dicta and asides. [19] 34: 223. **Ennis, L. H.**—Insects and light. [Pro. & Trans. So. Lond. Ent. & Nat. Hist. Soc.] 1938-39: 85-88. **Gaul, A. T.**—A method of collecting nests of some social Hymenoptera. [19] 34: 197-198. **Glick, P. A.**—The distribution of insects, spiders and mites in the air. [U. S. D. A.] Tech. Bull. 673: 150 pp., ill. **Henriksen, K. L.**—A revised index of the insects of Gronland. [Meddel. om Gronland] 119: 112 pp. **Holmberg, E. L.**—Obituary. Anon. [104] 10: 91-92. **Immelman, M. N. S.**—On the control of temperature and humidity of air in small cabinets. [Jour. Ent. Soc. So. Africa] 1: 131-136, ill. **Imms, A. D.**—Insects in the upper air. [31] 144: 406. **Klingstedt, H.**—Die Uvarovsche Theorie der Wanderheuschreckenphasen und ihre Bedeutung fur die Zoologie. [51] 19: 1-15, ill. **Moon, H. P.**—Aspects of the ecology of Aquatic insects. [Trans. Soc. Brit. Ent.] 6: 39-49, ill. **Morrison, H.**—Taxonomy of some scale insects of the genus Parlatoria encountered in Plant Quarantine Inspection Work. [U. S. Dept. Agric.] Misc. Pub. 344: 34 pp., ill. **Nielsen, E. T.**—Temperatures in a nest of Bombus hypnorum. [Vidensk. Medd. Dansk naturh. Foren] 102: 1-6, ill. **Omer-Cooper, J.**—The classification of the recent hexapod insects. [Jour. Ent. Soc. So. Africa] 1: 137-148. **Roselli, F. L.**—Sobre insectos del cretaceo del Uruguay o descubrimientos de admirables instintos constructivos de esa epoca. [Bol. Soc. Amig. Cien. Nat. Kraglievich-Fontana] 1: 72-102, ill. **Schmidt, G.**—Gebrauchliche Namen von Schadinsekten in verschiedenen Landern. [Ent. Beihft., Berlin-Dahlem] 6: 1-160. **Schuler, L.**—La localisation des especes rares [Misc. Entomolog.] 40: 27-31. **Voigt, E.**—Weichteile an fossilen Insekten aus der eozanen Braunkohle des Geiseltales bei Halle (Saale). [N. Act. Leopoldina] 6, no. 34 pp. 1-38, ill. **Wheeler, W. M.**—Obituary. By G. H. Parker. [Nat. Acad. Sci. U. S. A.] 19: 203-241, ill. **Williams, C. B.**—An analysis of four years captures of insects in a light trap. [36] 89: 79-131, ill. **de Worms, C. G. M.**—Insects at light. [Pro. & Trans. S. Lond. Ent. & Nat. Hist. Soc.] 1938-39: 80-84.

ANATOMY, PHYSIOLOGY, ETC.—Abeloos, M.—

Etude biométrique des caractères sexuels secondaires (tarses) dans deux espèces de Timarchas (Coleop.). [77] 131: 563-565. **Alpatov, W. W.**—Contribution to the study of variation in the honey bee. [Zoolog. Jour.] 17: 241-245, ill. [Russian, with English summary]. Contribution to the study of variation in the honey bee. [Zoolog. Jour.] 17: 473-481, ill. [Russian, with English summary]. **Anon.**—Bioluminescence in Photobacterium phosphoreum. On the decomposition of chitin by microbiological means. [Proroda-Nature] 1939: 97. **Asahina, S.**—Tonerzeugung bei Epiophlebia-larven (Anisozygoptera). [34] 126: 323-325, ill. **Awati & Dike.**—Histological studies of the digestive system of thrips. [Jour. Univ. Bombay] 7: 67-98, ill. **Becker, E.**—The mouth apparatus of the Anopheles larva and its movements in feeding upon organisms of the surface film of water. [Zoolog. Jour.] 17: 427-440, ill. [Russian, with English summary.] On the mechanism of feeding in larvae of Anopheles. [Zoolog. Jour.] 17: 741-762, ill. [Russian, with English summary]. **Corteggiani & Serfaty.**—Acétylcholine et cholinestérase chez les insectes et les Arachnides. [77] 131: 1124-1126. **Deonier, C. C.**—Responses of the blowflies, Cochliomyia americana and Phormia regina to stimulations of the tarsal chemoreceptors. [7] 32: 526-532. **Evans, A. C.**—The utilisation of food by certain lepidopterous larvae. [36] 89: 13-22, ill. **Evans & Goodliffe.**—The utilisation of food by the larva of the mealworm Tenebrio molitor. [107] 14: 57-62. **Fox, H.**—The egg content and nymphal production and emergence in oothecae of two introduced spp. of Asiatic Mantids. [7] 32: 549-560. Infestation of oothecae of introduced Asiatic Mantids by Podagrion mantis (Orth.: Mantidae; Hymen.: Chalcididae). [7] 32: 561-563. **Fraenkel, G.**—The function of the halteres of flies. [93] 109: 69-78, ill. **Fraser, F. C.**—A note on the function, incidence and phylogenetic importance of the basal accessory antenodal nervures in the order Odonata. [107] 14: 63-68, ill. **Hinton, H. E.**—An inquiry into the natural classification of the Dryopoidea, based partly on a study of their internal anatomy. [36] 89: 133-184, ill.. **Hoffman, C. C. & Nieto Roaro, D.**—Segunda contribucion al conocimiento de los venenos de lôs Alacranes mexicanos. [An. Inst. Biol. Mex.] 10: 83-92. **Hufner, B.**—Die antennen und antennalen sinnesorganeder Hydrocores mit besonderer berucksichtigung der Nepiden. [Zoologica] 35: 31 pp., ill. **Karandikar, K. R.**—External structures of the

desert locust. [Jour. Univ. Bombay] 7: 3-57, ill. **Knipp, C. T.**—On the path of the firefly while periodically flashing. [Trans. Ill. State Acad. Sci.] 31: 245-246, ill. **Lanchester, H. P.**—The external anatomy of the larva of the Pacific Coast wireworm. [U. S. Dept. Agric.] Tech. Bull. 693: 40 pp., ill. **Lennox, F. G.**—Studies of the physiology and toxicology of blowflies. [Comm. Australia Coun Sci. & Ind. Res.] Pamphlet 90: 24 pp., ill. **Lepesme, P.**—Recherches quantitatives sur la variation artificielle de la teneur en eau de quelques insectes et sa limite mortelle. [Comptes Rend. Sea. Acad. Sci., Paris] 208: 1753-1755. **Lison, L.**—See under Coleoptera. **Losina-Losinski, L. C.**—Frost resistance and anabiosis in the caterpillar of Pyrausta nubilalis. [Zoolog. Jour.] 16: 614-642, ill. [Russian, with English summary]. **Mazia & Jaeger.**—Nuclease action, protease action and histochemical tests on salivary chromosomes of Drosophila. [Pro. Nat. Acad. Sci. U. S. A.] 25: 456-461. **Mellanby, K.**—The physiology and activity of the bed-bug (Cimex lectularius) in a natural infestation. [116] 31: 200-211, ill. Fertilization and egg production in the bed-bug, Cimex lectularius. [116] 31: 193-199. **Noskiewicz & Poluszynski.**—Embryologische untersuchungen an Strepsipteren.. II. Teil. Polyembryonie. [Zool. Poloniae] 1: (1935) 53-94, ill. **Poll, M.**—See underLepidoptera. **Pruffer, J.**—Weitere untersuchungen uber die mannchen-anlockung bei Lymantria dispar. [Zool. Poloniae] 2 (1937): 43-66, ill. **Pussard & Nepveu.**—Quelques caractères des oeufs de Rhytidoderes plicatus (Curculionide) [77] 131: 1097-1099. **Robinson, G. G.**—The mouthparts and their function in the female mosquito, Anopheles maculipennis. [116] 31: 212-241, ill. **Simmons, S. W.**—Digestive enzymes of the larva of the cattle grub, Hypoderma lineatum. [7] 32: 621-627. **Stanley, J.**—Time required for the development of Tribolium eggs at 27° C. [7] 32: 564-569, ill. **Stella, E.**—Studi sulle termiti 1. Comportamento citologico delle gonadi in operai di Reticulitermes lucifugus. [Rev. Biol. Colon. Roma] 2: 81-95. **Steopoe, I.**—Nouvelles recherches sur la sperm atogenese chez Gryllotalpa vulgaris de Roumani. [Arch. de Zool. Exp. et Gen. Paris] 80: 445-464, ill. **Tatum, E. L.**—Development of eye-colors in Drosophila. Bacterial synthesis of v+ hormone. [Pro. Nat. Acad. Sci. U. S. A.] 25: 486-490. Nutritional requirements of Drosophila melanogaster. [Pro. Nat. Acad. Sci. U. S. A.] 25: 490-497. **Tirelli, M.**—Caracteres morfologicos y propiedades fisiologicas de

la sierosa de los huevos de los insectos (Bombyx mori). [115] 13: 177-187, ill. **Woodruff & Seamans.**—The rate of regeneration in the German roach. [7] 32: 589-599. **Zernoff & Kotzovsky.**—La chimiothérapie antituberculeuse chez les insectes. Action du para-aminophènysulfamide (1162 F) chez les chenilles de Galleria mellonella. [77] 131 :1250-1252.

ARACHNIDA AND MYRIOPODA.—Brett, G. A.—On the period of survival of the egg, larva, and first nymph stages of the argasid tick Ornithodorous moubata at different relative humidities. [22] 30: 247-253, ill. **Bristowe, W. S.**—The Comity of Spiders. [Ray Soc., London] vol. 1; x + 228 pp., ill. **Canals, J.**—Nuevos Opiliones de la Argentina. [Notas Mus. de La Plata] 4: 143-156, ill. **Hedgpeth, J. W.**—Some Pycnogonids found off the Coast of Southern California. [Amer. Midl. Nat.] 22: 458-465, ill. **Hoffman, C. C. & Nieto Roaro, D.**—See under Anatomy. **Jawlowski, H.**—Contribution to the knowledge of the Diplopoda of Nova Scotia and Newfoundland. [Frag. Faun. Mus. Zool. Polonici] 4: 149-158, ill. **de Mello-Leitao, C.**—Pseudoscorpionidos de Argentina. [Notas Mus. de La Plata] 4: 115-122, ill. **Oudemans, A. C.**—Neue funde auf dem gebiete der systematik und der nomenklatur der Acari. [34] 126: 195-201. **Petrunkevitch, A.**—The status of the fam. Archaeidae and the gen. Landana. [7] 32: 479-501, ill., (k*). **Pinto & Lins de Almeida.**—Sobre o Amblyomma neumanni, parasito do homen na Argentina. [15] 11: 113-124, ill. **Rondelli, M. T.**—Contributo alla conoscenza della fauna Ixodologica Sud-Americana. [Riv. Parassitologia] 3: 39-55, ill. **Stiles & Detwiler.**—Progress report on a survey of the spiders of Iowa. [Proc. Iowa Acad. Sci.] 45: 285-287.

THE SMALLER ORDERS OF INSECTS—Martin, R. D. C.—Life histories of Agrion aequabile and A. maculatum (Odonata: Agriidae). [7] 32: 601-619, ill. **Mickel & Milliron.**—Rearing the caddice fly, Limnephilus indivisus and its Hymenopterous parasite Hemiteles biannulatus. [7] 32: 575-580. **Milne & Milne.**—Evolutionary trends in caddis worm case construction. [7] 32: 533-542, ill. **Ross, H. H.**—Three n. spp. of Nearctic Trichoptera. [7] 32: 628-631, ill. **Whitehouse, F. C.**—Notes on some tropical dragonflies. [4] 71: 199-202, (S).

ORTHOPTERA—Fox, H.—See under Anatomy. **Klingstedt, H.**—See under general. **Paul & Fox**—The distribution of the mormon cricket, Anabrus simplex in Saskatchewan. [4] 71: 202-204, ill.

HEMIPTERA—de la Torre-Bueno, J. R.—Remarks on the subgen. Tivarbus of the gen. Hyalymenus with descriptions of five n. sp. (Alydid.). [19] 34: 177-197, (k*). Two new U. S. records of Heteroptera. [19] 34: 214. **Hungerford, H. B.**—Report on some water bugs from Costa Rica, C. A. [7] 32: 587-588. A Corixid from deep water. [7] 32: 585-586. **Wood, R. W.**—Fire-fly "Spinthariscope". [31] 144: 381; also [68] 90: 233-234.

LEPIDOPTERA—Brown & Gabriel.—New forms and spp. in the gen. Catasticta-II. (Pierid.). [19] 34: 203-214. **Dethier, V. G.**—Early stages of some Hesperiinae. [4] 71: 117-118. **Ficht, G. A.**—The development of a second generation of the European corn borer, Pyrausta nubilalis in Indiana. [Pro. Indiana Acad. Sci.] 48: 211-215, ill. **Forbes, W. T. M.**—The lepidoptera of Barro Colorado Island, Panama. [Bull. Mus. Comp. Zool.] 85: 97-322, ill. (k*). **Fournier, O.**—Lépidoptères récoltés a Gaspé, Qué. [Le Natur. Canadien] 66: 191-193. **Frohne, W. C.**—Observations on the biology of three semiaquatic lacustrine moths. [Trans. Amer. Micros. Soc.] 58: 327-348, ill. Biology of Chilo forbesellus, an hygrophilous Crambine moth. [Trans. Amer. Micros. Soc.] 58: 304-326, ill. **Gerasimov, A. M.**—Die Chaetotaxie des Analsegments der Raupen. [64] 24: 71-78, ill. **Hemming, F.**—Notes on the generic nomenclature of the Lepidoptera Rhopalocera, I. [107] 8: 133-138. (*). **Kozhantchikov, I. V.**—On the influence of the environment upon the fertility of Lepidoptera. [Zoolog. Jour.] 16: 643-663, ill. [Russian, with English summary]. **Losina-Losinski, L. C.**—See under Anatomy. **McDunnough, J.**—New North American Geometridae with notes, I. [4] 71: 187-192. Papilio brevicauda in Cape Breton Island, N. S. [4] 71: 153-158, ill. **Poll, M.**—Contribution a l'étude de l'appareil urinaire des chenilles de Lépidoptères. [Ann. Soc. R. Zool. Belgique] 69: 9-52, ill. **Pruffer, J.**—See under Anatomy. **Ridoutt, C. A.**—Dos maripos comunes de Lima: Danaus erippus y D. archippus. [Bol. Mus. Hist. Nat. "Javier Prado", Lima, Peru] 3: 65-70, ill. **Stahler, N.**—Notes on the taxonomy of Noctuid larvae. [55] 15: 123-126. **Vazquez, L.**—Contribuciones al conocimiento de los lepidopteros mexicanos. [An. Inst. Biol. Mex.] 10: 93-101, ill.

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SPECIAL NOTICES.—Neue untersuchungen uber die fossilen insekten mit erganzungen und nachtragen sowie ausblicken auf phylogenetische, palaeogeographische und allgemein biologische probleme. By A. Handlirsch. [Ann. Naturhist. Mus. Wien] 49: 240 pp., ill.

The Rockefeller Foundation. A Review for 1938, by Raymond B. Fosdick, its President, New York 1939, devotes several pages to jungle yellow fever, vaccination therefor and the spread of the African *Anopheles gambiae* in Brazil. The Annual Report of the International Health Division of the same Foundation states progress made in control and investigation of the arthropod-carried diseases yellow fever, Rocky Mountain spotted fever, sylvatic plague and malaria.

202 COMMON HOUSEHOLD PESTS OF NORTH AMERICA. By HUGO HARTNACK. Hartnack Publishing Company, Chicago, Illinois, 1939, 319 pages, many illustrations.—A compact octavo volume, full of worthwhile information on the more common household pests, this little book seems destined to be of real value for professional and layman alike. Its subject matter, on the whole is concise and simply presented in a fresh and informal manner. Copious photographs and diagrams illustrate nearly every pest discussed. The illustrations, often original, but mostly from German sources, offer a pleasant change from more familiar figures, some of which have been in use thirty or forty years. In scope the book includes much that is not found in any other single American work on this subject. Many of Dr. Hartnack's statements are made from information furnished by German authors, who have recently done painstaking work in this field and anyone wishing to go deeper into the subject is advised to consult the originals, of which the present volume gives only excerpts. In addition to the German sources, several American works have been consulted, but the author does not seem to have seen those of Howard or Herrick. Far from limiting his text to insect pests of the household, the author includes other arthropods, as well as the common mammals and even birds. Moreover, his arrangement is systematic, rather than by food materials, as, for example, it is in Herrick's works. Much might be said for both systems of arrangement, but Dr. Hartnack has at least minimized the necessity of knowing the food material of a given pest before his book can be of ready use. Moreover, the author outlines salient structural inter-relationships of the animals discussed, and although the book can in no sense be considered a treatise on the taxonomy of household pests, it does give important taxonomic characters wherever these will clarify identification. The subject matter is limited to the animal kingdom of which two major phyla are discussed, namely the chordata and arthropoda. Under chordata he includes the various house-infesting rats, mice, squirrels, bats, the English or House sparrow and common pigeon or Rock-dove. These alone occupy 22 pages of the text, but the bulk of the work naturally is given to insects of which species belonging to 14 orders are treated in 217 pages. Additional arthropods mentioned include sowbugs, millepedes, centipedes, pseudo-scorpions, harvestmen, true spiders, jumping spiders, mites and ticks. Finally there are chapters on keratin pests, Incinerator fauna, Carcass decomposition, Insect bite statistics, Insectaphobia, Extermination, The household pest problem and

Natural Control. So much for the bare outline of the book's contents. It would be an oversight for any reviewer to overlook the many innovations contained in the volume. Among these may be mentioned the final chapters enumerated above, which are interesting and full of information which the public should have. Dr. Hartnack is at some pains to educate his readers and points out serious, but largely ignored, political injustices and Federal short-sightedness in dealing with the problems of household pests and their control. In many ways he strives to awaken recognition of situations in the United States which should be regarded as well nigh intolerable, but which are actually encouraged, through ignorance, political control, or public indifference. In additional to the essential facts of life history, habits, foods and control measures for the pests, or groups of similar pests discussed, the author often includes interesting accounts of their history, quoting from and even reproducing in facsimile old documents and illustrations of past centuries. The text is adorned with small margin cuts, depicting embarrassing and amusing situations encountered by persons harassed by their insect tormentors. While not contributing to the scientific value of the book, they provide a light and entertaining touch which certainly does not detract from its essential worth. In fact the very absence of the usual "dryness," which this volume happily avoids, and which to some degree at least is responsible for the lack of public interest and intelligence on this subject, is, we feel, one of the many outstanding qualities of the book. The author has made a traditionally uninteresting subject come to life and thereby has made it possible for the layman to inform himself and enjoy the process. Perhaps more remarkable than this, is Dr. Hartnack's whole approach to the problem. It is one which may not be unique but certainly is unusual, and yet constructively advanced over more widely accepted theories. He points out that for centuries, man has labored under the illusion that he was the purpose and center of the universe, and that therefore all things which interfered with his will or well being were his enemies and should suffer destruction or be brought to serve his purpose. The author, however, makes clear that existence on this planet is competitive and that all life has an equal right with man to be established on the earth. He does not, of course, sentimentally infer that we should suffer pests and vermin to flourish at our expense, but recommends that we justify our superiority by using the brains which give it to us. He suggests that in order to control pests, we remove the materials which attract them to in-

accessible places, and that we apply our knowledge of their habits when constructing buildings to build them out. The author contends that if we are so careless as to provide food and shelter for various pests and then find the pests in action, the fault is not theirs but our own. Yet, he concludes, we have always blamed the pests and not ourselves for the depredations they occasion. It is with admitted reluctance, therefore, that he recommends the use of gases and poisons at all—as it were taking unfair advantage of animals which are actually innocent of any crime. Any proponent of this viewpoint would have to recommend practical measures to make it effective. This Dr. Hartnack does not fail to do and stresses the importance of proper organization, local, state and federal, in combating pests, pointing out what has already been done abroad in many specific instances. As an educational theory, as well as in practical application, his point of view would seem to have unlimited possibilities which ultimately could bring us closer to the solutions of our problems than we have ever been before. In the foreword to his work the author asks that his critics judge it on two scores: 1. "Does it give worthwhile information on household pests? Does it make information that is already available more usable Does it stimulate research? 2. Does the work stimulate — thinking about the solution of the household pest problem by organization Or should the field of household pests stay abandoned or nearly so?" To some of these questions, we have already given an answer in the foregoing remarks. Whether or not the work will stimulate research remains to be seen, but the stimulus is there. If we were to criticise any feature of the work unfavorably it would be, perhaps, the index which is not as full as it might be, and could be expanded with greater specific citations. Its use is not made easier by the liberal interpolation of many symbols, explanation of which appears at the beginning of the index, but which are too numerous to remember, and necessitate frequent reference to their key. In the past few weeks several opportunities for practical use of the work have arisen in answering inquiries at the Academy of Natural Sciences, regarding household pests. In every case both text and illustrations have furnished adequate information quickly and this experience though brief, leads us to feel that the work will fully justify its existence. Not only to the professional exterminators is this book of value, but it should be a useful reference work in the household and even the layman will find it interesting reading.

JOHN W. CADBURY, 3rd.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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